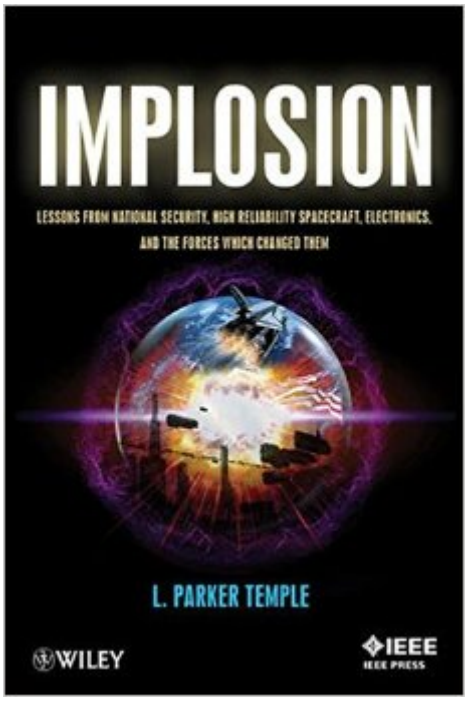
Implosion: Lessons From National Security, High Reliability Spacecraft, Electronics, And The Forces Which Changed Them



Synopsis

Implosion is a focused study of the history and uses of high-reliability, solid-state electronics, military standards, and space systems that support our national security and defense. This book is unique in combining the interdependent evolution of and interrelationships among military standards, solid-state electronics, and very high-reliability space systems. Starting with a brief description of the physics that enabled the development of the first transistor, Implosion covers the need for standardizing military electronics, which began during World War II and continues today. The book shows how these twin topics affected, and largely enabled, the highest reliability and most technologically capable robotic systems ever conceived. This riveting history helps readers: Realize the complex interdependence of solid-state electronics and practical implementations in the national security and defense space programs Understand the evolution of military standards for piece parts, quality, and reliability as they affected these programs Gain insight into the attempted reforms of federal systems acquisition of security- and defense-related space systems in the latter half of the twentieth century Appreciate the complexity of science and technology public policy decisions in the context of political, organizational, and economic realities Written in clear, jargon-free language, but with plenty of technical detail, Implosion is a must-read for aerospace and aviation engineers, manufacturers, and enthusiasts; technology students and historians; and anyone interested in the history of technology, military technology, and the space program.

Book Information

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Customer Reviews

Solid-state electronics transformed human existence in the latter third of the twentieth century.

Taking it for granted, most Americans use technologies based on this type of electronics every day. One cannot use a computer, telephone, television, or a host of other everyday devices without employing solid-state electronics. In this fully-documented study L. Parker Temple, a longtime space policy analyst and technologist, offers a useful history of this technology but even more hones in on the national security origins and evolution of this field before presenting a set of lessons learned and prescriptions for movement forward with this aspect of high technology.Temple begins in Implosion by exploring in quite useful detail the evolutionary nature of this complex technological transformation. It originated as a requirement for U.S. national security space efforts. The proliferation of applications for solid state electronics in the early Cold War era revolutionized the manner in which war would be waged ever after. Moreover, this technology had myriad applications beyond military equipment and changed the nature of consumer electronics as well.This is much more than a narrow study in the history of technology. The author focuses on the broad interrelationships of technology, innovation, systems, and policy to develop a useful analysis of technological leap-frogging more than a generation into the future. In the process he offers lessons that will be of merit to engineers, project managers, military officers, and other technology professionals in addition to historians. I was especially entranced by Templeâ ™s complex analysis of the evolution of military standards and practices for technology ranging from individual parts to whole systems.

"Implosion: Lessons from National Security, High Reliability Spacecraft, Electronics, and the Forces which Changed Them" by L. Parker Temple tells the complicated but crucially important story of how high reliability electronics, vital to modern spacecraft, evolved. Written as a history, starting with vacuum tubes and the invention of the transistor, and continuing through integrated circuits (IC) and very large scale integration (VLSI), the military and intelligence demands of the Cold War are shown as driving the creation of high reliability parts. High reliability was not a "nice to have" feature, but crucial to expensive satellites that could not be maintained once placed in space, and operating in extreme conditions that had no terrestrial parallel.Implosion is not just a technical history, but a public policy and business management story as well. The author describes a complex, highly coupled system of government agencies, military services, prime contractors, subcontractors, universities, national laboratories, and Federally Funded Research and Development Centers (FFRDCs) that initially created and then sustained the capacity to create electronics that could function in space at previously unheard of levels of reliability. This was the result not only of research into fundamental physics and engineering, but of standards, manufacturing and test

processes, and economic incentives that created deep levels of "intellectual capital" in the U.S. military-industrial complex.Historical treatments of aerospace and defense subjects typically focus on men or machines, such as decisions by political leaders and descriptions of space missions and the most visible hardware.

Implosion: Lessons from National Security, High Reliability Spacecraft, Electronics, and the Forces Which Changed Them Home Security: Top 10 Home Security Strategies to Protect Your House and Family Against Criminals and Break-ins (home security monitor, home security system diy, secure home network) Structured to Fail - Implosion of the global economy High Blood Pressure Cure: How To Lower Blood Pressure Naturally in 30 Days (Alternative Medicine, Natural Cures, Natural Remedies, High Blood Pressure ... Cures for High Blood Pressure, High Bl) Fault-Tolerance and Reliability Techniques for High-Density Random-Access Memories (Prentice Hall Modern Semiconductor Design Series) Communicating With Intelligence: Writing and Briefing in the Intelligence and National Security Communities (Security and Professional Intelligence Education Series) Social Security: Time for a Life of Leisure - The Guide of Secrets to Maximising Social Security Retirement Benefits and Planning Your Retirement (social ... disability, social security made simple) Mosfet Modeling for VLSI Simulation: Theory And Practice (International Series on Advances in Solid State Electronics) (International Series on Advances in Solid State Electronics and Technology) The Physics And Modeling of Mosfets (International Series on Advances in Solid State Electronics) (International Series on Advances in Solid State Electronics and Technology (Unnumbered)) Digital Electronics: A Primer : Introductory Logic Circuit Design (Icp Primers in Electronics and Computer Science) All-in-One Electronics Guide: Your complete ultimate guide to understanding and utilizing electronics! Teach Yourself Electricity and Electronics, 5th Edition (Teach Yourself Electricity & Electronics) Spacecraft Structures and Mechanisms from Concept to Launch (The Space Technology Library, Vol. 4) Spacecraft Structures and Mechanisms: From Concept to Launch (Space Technology Library) Fun with Spacecraft Stencils (Dover Stencils) DIY Instruments for Amateur Space: Inventing Utility for Your Spacecraft Once It Achieves Orbit Spacecraft Thermal Control Handbook, Volume I: Fundamental Technologies National Electrical Code 2002 (softcover) (National Fire Protection Association National Electrical Code) Fifty Ships That Changed the Course of History: A Nautical History of the World (Fifty Things That Changed the Course of History) Mason Jar Nation: The Jars that Changed America and 50 Clever Ways to Use Them Today